ENG BCA No. 5244-Q
NORAIR ENGINEERING CORP.

Claims by Respondent Owner, Partial Records--The Respondent Owner WMATA, made a set of claims against a prime contractor based on the delivery by its supplier of latently defective parts in a construction project. The Respondent's repair and retrofit records were incomplete. Based on testimony and partial records, the Board allowed some claims and disallowed others.

Engineering Design, Standard of Care--The Board found that there was no showing that Respondent's design was defective and no showing that the design should have provided ready access to the defective parts in the structure.

Repair, Mitigation of Loss--The Board found there were no improper improvements in the repair effort and that there was no showing that WMATA had failed to mitigate loss.

Defective Parts, Credit for Use--The Board found that the defective parts (isolation pads) had a useful life expectancy of 25 years. Based upon a period of use by Respondent of the defective pads of six years before the defects became apparent, the Board applied a credit factor of 6/25 to apply to the cost of the pads. This resulted in a credit against the Respondent's claim.

Loss in Value, Measure of Adjustment--The Board was guided by the principle of loss in value for defective construction in determining the appropriate adjustment. The Board determined individual cost items for repair, and these sums, and their total, were consistent with the loss in value principle.

Evidence, Offers of Compromise--The Board excluded one document as relating to an offer of compromise. Other challenged documents were admitted.

Evidence, Summaries--Summaries of voluminous records were admitted. Such summaries are admissible under District of Columbia law even if the underlying data were not available. There was no hint of fraud.

Price Adjustments, Receipt of Collateral Source Funds--The Respondent received Federal grant funds for part of the repair and retrofit expense it claims against Appellant, but Respondent was obligated to reimburse the Federal Government respecting any third party recovery. Appellant has not shown that any double recovery will occur.

BEFORE THE CORPS OF ENGINEERS BOARD OF CONTRACT APPEALS

Appeal of	)	
	)	
NORAIR ENGINEERING CORP.	)	ENG BCA No. 5244-Q
	)	
Contract No. 1D0071	)	

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OPINION BY ADMINISTRATIVE JUDGE FRENZEN

The Board held in Norair Engineering Corp., ENG BCA No. 5244, 92-2 BCA ¶ 25,009 that Respondent had proven entitlement to compensation for the delivery of defective materials. The parties were unable to agree on the amount due, and this appeal from the Contracting Officer's Final Decision of February 24, 1995, making demands for $1,050,970, resulted. The expense of repair and retrofit at the WMATA Potomac Avenue Subway station in the District of Columbia is at issue.

Related motions by the same Appellant under the same contract are noted at 97-1 BCA ¶ 28,675 (denial of an Appellant Motion for Summary Disposition) and 97-1 BCA ¶ 28,917, (denial of an Appellant Motion to Dismiss for lack of jurisdiction). The jurisdiction motion followed the summary disposition motion. *See also* Norair Engineering Corp. v. WMATA, Civil Action No. 96-3980, USDC, MD, March 2, 1998, sustaining Board jurisdiction.

The present appeal presents several issues respecting the amount and nature of

compensation to which Respondent is entitled for the retrofit expense it undertook because of the delivery of defective isolation pads, as found by the Board in its 1992 decision. We allow the Appeal in part and conclude that Respondent is entitled to $528,443.

FINDINGS OF FACT

1. WMATA did not establish separate cost accounts for the repair and retrofit at Potomac Avenue, contract 1D0071. Tr. 397-398.

2. The WMATA accounts that were established related to the "floating slab" repair and retrofit, and were not broken down by contract. Tr. 397-398.

3. Work papers of WMATA auditor L. Weiss contain the following observations, dated September 7, 1995:

> Norair Engineering Corporation
> Contract 1D0071 - Potomac Ave Station
> WMATA Claim for Retrofit Work
> Comments by WMATA Auditor on Source Data
> for Wages per Audit
>
> The WMATA Auditor obtained data prepared by Don Hunter, Deputy Director of WMATA's Office of Accounting on actual wages for retrofit work for isolation pads (per work paper H-4). Mr. Hunter stated that monthly wage amounts are supported by data labor distribution reports showing individual employees, amounts and dates. The WMATA Auditor selectively verified labor distribution reports.
>
> The Office of Accounting does not accumulate actual direct wages for retrofit work for Contract 1D0071, but rather for retrofit work for all WMATA contracts in cost codes for hourly and salaried employees. PROC's Cost Analysis of 1/17/95 shows the period of retrofit work for Contract 1D0071 as April 18, 1994 through November 23, 1994 (per work paper D-6). The time period was furnished to PROC by Tony Adams, Project Manager, Office of Track and Structures. L. Weiss, WMATA Auditor, asked Tony Adams if retrofit work for any WMATA contract other than 1D0071 was being performed during the period 4/18/94 - 11/23/94. Mr. Adams stated that retrofit work for the period of 4/18/94 through 11/23/94 related almost entirely to Contract 1D0071. . . . .
>
> The WMATA Auditor utilized the data submitted by the Office of Accounting, except as follows:
>
> For June 1994, the WMATA Auditor determined wages per Audit of $25,773 primarily based on data furnished by Linda Peterson of the Office of Rail - Track and Structures per work paper H-5 (Note 2). The records of the Office of

Accounting show wages of $11,944. It appears that the significant difference is due to coding errors. In the opinion of the WMATA Auditor, the more reliable amount for wages for June 1994 is $25,773 which is comparable to the level of wages for most of the months of corrective work.

For the period April 18, 1994 (inception) through April 30, 1994, the WMATA Auditor determined actual wages of $13,695 primarily based on information furnished by Linda Peterson of the Office of Rail - Track & Structures per work paper H-3. The records of WMATA's Office of Accounting do not readily show a breakdown of actual wages for this specific period of time.

A R4 supp., Tab 129, p H2b. Tr. 401

4. The WMATA audit office issued a report respecting the WMATA claim that included the following summary of costs claimed for which record support was found:

Direct Project Costs:	
Wages	$188,902
Fringe Benefits	102,260
Materials	127,640
Equipment	145,007
Subtotal	564,149
Indirect Project Costs	66,741
Subtotal	630,890
General & Administrative Expenses	70,377
Total	$701,267

The amount per Audit includes only those allocable costs which we were able to verify to WMATA's financial records. Additional costs may be allocable to WMATA's claim for corrective work, including costs for work yet to be done.

AUD 96-042, November 9, 1995. Appended to prefiled testimony of WMATA witness S.H. Rosenberg, CPA.

5. A covering memorandum from the WMATA Auditor General, James C. Stewart, respecting the WMATA claim, included the following:

We were unable to quantify all corrective work, since adequate documentation is lacking for certain items. . . . we determined that unquantified amounts relate to the following items:

Removal of cores; one time learning costs; survey, noise abatement and vibration measurement costs; engineering and consultant costs,

> extraordinary maintenance costs; small tools and supplies; and miscellaneous materials (drop in anchors, perimeter board, caulking, chairs, washers, steel, hooks, and other materials).

Id.

6. The period of work for retrofit and repair on this contract was April 18, 1994 - November 23, 1994. Report AUD 96-042, November 9, 1994, p. 4. The period is the equivalent of approximately 31.28 weeks.

7. During the above period, repair and retrofit work was performed on the subject contract as well as contract 1D0081. WMATA auditors compared the linear feet worked on both projects, and established that 92.56% of the work done during this period was on the subject contract (D-7), and the balance on 1D0081. The ratio was $\frac{\text{1492 linear feet - D-7}}{\text{1612 linear feet - all contracts}}$. This factor was used to obtain an allocation of labor cost to the subject contract. *Id.*

8. The allocation factor of 92.5% was adopted by Appellant in its alternative cost analyses. A Br., Attachment B, endnote 1.

9. Retrofit work was done overnight, when passenger service was suspended. The WMATA retrofit crew had access to the worksite at 12:30 - 12:45 a.m. It worked until 6:00 a.m. Tr. 226, 247-248.

10. There was an agreement with a union regarding this crew that permitted work without lunch or coffee breaks because of time constraints. Tr. 248.

11. At least two methods of repair and retrofit, Methods A and B, were adopted and used by WMATA. The procedure, Method A, of using jacks and beams to raise the floating slab to permit access for replacement of pads was used on the subject contract. Chen prefiled testimony, pp 2, *et seq*. The use of jacks and beams was somewhat less labor intensive because it did not require drilling 5" holes that were needed for Method B. *Id.*

12. The first paragraph of Article 1.49, Force Account Work, of the subject contract provides, in part:

> (a) In the event equitable adjustments pursuant to Article 1.3, "Changes" cannot be agreed to . . . , the Contracting Officer reserves the right to order work on a force account basis. When work is ordered under this Article and notwithstanding the provisions of Article 1.3, "Changes", compensation for this work shall be determined as hereinafter provided . . .

Contract 1D0071.

13. Wilson, Ihrig & Associates, Inc. and Dr. George P. Wilson were engaged by WMATA in March, 1970, as a subcontractor to provide special consulting services on noise and vibration control designs for the WMATA metro project. Dr. Wilson testified at both the entitlement and quantum hearings. At the quantum hearing, his testimony included the following respecting the mass of the slab and the expected life of the pads:

> The lack of accessibility to the support pads was a subject of considerable discussion during the development of the floating slab design. For example, access holes in the slab were considered, however, it was found that the size of holes necessary to provide for sufficient access would make the design impractical with potential for cracking of the concrete and reduction of the effective mass.
>
> The total weight or mass of the floating slab is an important parameter of the vibration and noise reduction performance. Therefore, within the limited space which was allotted for the floating slab assembly in the subway structures, it was necessary to design the floating slab as continuous solid slabs without providing openings for access. Also, from the standpoint of constructability the continuously formed, flat floating slab was determined to be the necessary and appropriate design. Thus, the lack of accessibility to the resilient support pads was a consequence of the available space for the floating slab and requirements that the slab be a configuration which was practical to construct within the subway structures.
>
> To achieve the long life required because of the non-accessibility required that the resilient material be a very high quality with stable properties, with the intent that the properties remain the same over at least a 25 to 50 year period.
>
> * * * *
>
> Experience gained since the development of the original Specification requirements has borne out that, in fact, high quality natural rubber pads with the characteristics required by the Specification do demonstrate long life. Currently there are some installations that have demonstrated 30 year life with no change in mechanical characteristics and there are numerous installations that have at this point 15 to 20 years of service with no change or deterioration in mechanical properties of the natural rubber support pads. These installations are expected to continue without degradation of performance for 50 to 100 years.

Wilson prefiled testimony, Exh. RQ-GPW-2, pp. 6-7.

14. Dr. Robert A. Hood was Appellant's expert witness regarding design. His opinion was that the WMATA floating slab design was not adequate. The rationale for his opinion follows:

> It is standard practice in the industry to allow for the inspection and replacement of wearable or degradable parts, such as isolation pads. Designing for access to isolation pads would permit the ability for such inspection and replacement. For example, access would permit the inspection and cleaning of the pads with regard to potentially harmful environmental elements and facilitate maintenance of the drainage channel.
>
> Further, in situations where access is not to be provided, then a "what if" scenario must be undertaken. In this work, the consequences of failure are carefully and systematically evaluated and steps taken to minimize any adverse effects. For example, if there is failure of the isolators and the slab settles then a system of supports could be designed in the original system to hold the slab at a level which would not adversely affect the vertical alignment or track elevation.

Hood prefiled testimony, pp. 7-8.

15. When asked respecting examples of floating slab systems from the 1970's that provided for access to the isolators, Dr. Hood cited only the Toronto system. When asked for other examples, without reference to the 1970's, he cited the Kap Shui Mun Bridge, in Hong Kong, that he had recently designed. *Id.*, p. 10.

16. In another part of his testimony, Dr. Hood includes a summary list of floating slab systems in use. The list follows:

> London Underground Ltd, Barbican Design, UK
> Kap Shui Mun Bridge, Hong Kong
> Mersey Rail, UK
> Okayame-Hakata, Japan
> Washington Metro
> Singapore
> Toronto

Id., Exh. A RAH 2, pp. 4-5.

17. With respect to the Barbican design, "a pre stressed concrete bridge trough 3.2m wide supported on . . . rubber pads," Dr. Hood testified that the trough is filled with ballast to resemble a traditional railway system. He testified that this system allows for access to and replacement of the isolation pads. *Id.*

18. With respect to Mersey Rail, designed in 1985, and the Japanese project, there is no indication of design for access and replacement of isolation material, although testing indicates failure would not, or is unlikely, to cause a problem. The Singapore system does not have

provision for access and replacement. *Id.*

19. Dr. Hood also testified respecting the use of ballast mats as noise mitigation systems in France, Germany, Switzerland and Japan. There is no testimony respecting access to and replacement of these mats in these systems. He testified that these mats "are very rarely removed or inspected." *Id.*

20. The Barbican design also contained a bituminous rubber mixture under the ballast. If the bituminous mixture fails, there would be a loss of noise attentuation and the ballast would have to be regraded. Dr. Hood testified he was surprised at that, and that it had not "been pointed out to me before." Tr. 689-690.

21. Dr. Hood's education occurred in the UK. His professional experience is in the UK, France and Hong Kong. The principal reference to United States practice in his prefiled testimony is to a 1995 report by the US Department of Transportation. He began his professional career in 1972 following graduate work. Hood prefiled testimony, p. 3, Exh. A RAH 2, p. 2.

22. The WMATA work crew at the Potomac Avenue retrofit site consisted of seven union members and one supervisor. It reported at 10:00 p.m., but did not begin work at the retrofit site until 12:30 a.m., had no lunch or coffee breaks and ended the shift at 6 a.m. Allowing one hour for loading tools and materials, this results in an effective 6½ hours per day, or 32.5 hours per week on the retrofit work. Tr. 209-211, 216, 224-225, 230, 248-249. There is nothing in the record that supports a specific union agreement requiring work and pay for a 40 hour week. WMATA cost records for this matter are incomplete. Findings 1-3.

23. Mr. Adams, a WMATA supervisor, spent about 50% of his time on the D-7 retrofit. Tr. 251.

24. WMATA audit work papers show hourly wages expended on "floating slab actual labor," 1D0071, for various periods, including the period 04/20/94 through 6/30/94. This shows an average salary of at least $16 per hour for a workman, excluding the supervisor's salary of $26.87. The evidence shows a 32.5 hour effective week for a crew of 7 men that worked 31.28 weeks, which would accumulate an hourly wage sum of $113,859. Findings 6, 9, 22; A R4, Tab 129H, pp. H-8-b & H-8-c. *See* R Reply Br., p. 5.

25. The Final Decision of the Contracting Officer in this matter is dated February 24, 1995, and asserted a claim for $1,050,970 for extraordinary maintenance, consulting and engineering and retrofitting of defective pads. The Decision stated that "the most effective and efficient correction technique" had been determined and that "[s]eparate records of all costs resulting from this process have and will be maintained until the process is concluded." R4, Tab 2.

26. Mr. Anthony Adams testified for WMATA. WMATA claimed for part of Mr. Adams

salary for the pad retrofit. In 1987, Mr. Adams was promoted to Superintendent of Facility Maintenance. In 1991, he was promoted to the Superintendent of Special Projects. Tr. 196-197.

27. Repair of the system and retrofit of isolation pads required hand inserted replacement pads through specially drilled access holes through the floating slab. The process required new rubber pads, drilling and the use or installation of new studs and epoxy. Tr. 202-206, 218-221, 229-224.

28. The floating slab had to be raised by pumps and jacks as a part of the retrofit process. Tr. 226-230.

29. In repair and retrofit of the subject project, WMATA work papers in the Board record show use of 1400 isolation pads, 3625 studs, 242 boxes of epoxy, 52 fasteners, 25 16" drill bits, 19 5" drill bits, 197 1¾" drill bits and 1067 clips. A R.4, Tab 129 I, pp. I-1, I5a-I5c, Tr. 433.

30. The price per unit for studs of $1.40 is based on a reference to a purchase order of 11/1/94 that called for expected delivery in December, 1994, subsequent to the retrofit work. A R4, Tab 129 I, p. 5-4-19.

31. The WMATA auditor could not tell what studs were used on the retrofit. Tr. 434.

32. The price per box of epoxy of $40.80 is based on a reference to a purchase order of October 18, 1994 that called for expected delivery on 11/4/94. There is no way, in the opinion of the WMATA auditor, to identify which boxes were used on the subject retrofit. WMATA work papers indicate subsequent purchases were for $35 and $34.70 per box. A R.4, Tab 129I, p. I-4-23, Tr. 435.

33. The grates for which WMATA has included a cost claim had not been installed on the project at the time of the hearing. Tr. 434.

34. A principal piece of equipment used in the retrofit was the prime mover, a small diesel locomotive. It contains a compressor and a generator. Tr. 207.

35. The prime mover typically arrived at the work site between 12:30 & 12:45 a.m. It was about a 30 minute trip from its yard to the site. Tr. 212.

36. The prime mover and flat car brought equipment and tools to the work site. Tr. 224-225.

37. The prime mover stayed at the work site during the retrofit operation as a power source, and the compressor was used to power drills. Tr. 218, 227-228.

DECISION

The Contracting Officer's Final Decision indicated that separate records of all costs resulting from its correction efforts have and will be maintained. (Finding 25). This did not occur, and WMATA records are not complete. However, WMATA has presented a case based on testimony and partial records. In some cases, its claim is based on reasonable allocation from general cost records. Appellant, of course, points out the failure to maintain records but does not claim any particular harm or prejudice based upon the representation that complete records would be kept. In these circumstances, we have reviewed all elements of the WMATA claim and find parts are adequately supported and other parts are not.

Appellant's attack on WMATA's cost evidence includes general assertions that WMATA's audit was not properly planned, did not follow WMATA's own standards and that there were no standards for claiming labor costs on the D-7 retrofit. Appellant also criticizes the lack of cost codes and notes particular record deficiencies respecting the period of retrofit.

While we conclude that parts of Respondent's claim are unsupported, we do not believe that there is a basis for complete rejection. Appellant concedes that something is due for Respondent's loss. A Br., p. 74.

WMATA CLAIMS

The Contracting Officer claimed $1,050,970. WMATA however has receded from this to a claim for $954,805. This consists of the basic claim of $701,267, which is the sum found due by WMATA audit, after a review of the initial claim, and which is set out in Finding 4. In addition, WMATA claims the following:

Core Removal Cost	$23,315
Perimeter Board & Caulking	23,777
Small Tools & Supplies	10,498
Miscellaneous Material Cost	11,740
One Time Learning Cost	35,808
Survey/Noise/Vibration Measurement	29,583
Engineering/Consultant Cost	65,281
Extraordinary Maintenance Cost	53,536

R Reply Br., pp. 3-4. The WMATA audit of its own claim noted that adequate documentation did not exist for these supplementary claims. Finding 5.

APPELLANT DEFENSES

Appellant maintains that any recovery by Respondent should be subject to provisions of

Article 1.49, Force Account Work. Application of this Article would constrain Respondent's recovery in various ways. The Article, however, is plainly limited in application to the measurement of equitable adjustment claims, by the contractor, (and then, only in limited situations) when agreement under the Changes Article is not possible. Although there might be a certain rough justice in application of Article 1.49 to WMATA's claim, it is clear that WMATA's claim is measured by the provisions of the Inspection and Acceptance Article for recovery for latent defects, which allow "an appropriate adjustment" in contract price. *See* Norair Engineering Corp., ENG BCA No. 5244, 97-1 BCA ¶ 28,917 at pp. 144, 151-144, 152. In determining the measure of this adjustment, we are guided by the principle that a remedy that follows the reasonable cost of correcting defects is appropriate as long as this cost is not disproportionate to the loss in value caused by defective construction. *See* Restatement of Contracts, 2d Sec. 348 (1981), applied in Granite v. U.S., 962 F.2d 998 (Fed Cir, 1992).

Appellant does not state any particular defense connected to the loss in value principle. It does set forth various defenses, however, that are designed to reduce the WMATA claim in various ways. We find no evidence that the sums we allow violate the reasonable cost or loss in value principle of the Restatement.

Appellant claims that: the claim is improperly based on a total cost approach; the retrofit includes correction of design errors by WMATA; design improvements and improvement of the floating slab system were improperly included in the retrofit effort; the system was at the end of its useful life; and, WMATA did not mitigate damages and committed economic waste.

A Br., pp. 78-92.

The total cost approach ordinarily involves a claim by a contractor that consists of its total cost for a change, or other compensable event, and its bid amount. It is justly regarded with suspicion because of the possibility of inclusion of unreasonable claim sums, and it is allowed only in certain situations. *See* WRB Corp., v. United States, 12 CCF ¶ 81,781, 183 Ct. Cl. 409 (1968). In the present matter, WMATA has not taken a total cost approach, but has presented its claims for the period the retrofit was underway, in the case of salaries, created a rational allocation formula to exclude unallowable costs on another contract, and presented the balance as its claim. This is similar to the approach the court followed in WRB. Other claims are discussed below, and some claims fail or are limited because of problems with WMATA's evidence or the lack thereof. In general, however, there is no reasonable total cost objection to the WMATA claim.

Appellant has pursued more seriously a contention that the WMATA design of the slab system was defective in that it failed to incorporate provision for access to the pads. The claim is that WMATA should have anticipated pad failure, and provided a means readily to repair and retrofit. In this connection, Appellant has presented expert testimony of Dr. Robert A. Hood who

testified that standard design practice requires access to "wearable and degradable parts" such as isolation pads.

It is important to note that the pads, now described by Appellant as degradable, were placed in the project following a submission by Appellant's supplier that the pads were superior items and were fit for Respondent's intended use in a mass transit system. Appellant's argument demands, in effect, that Respondent admit it was mistaken in relying on Appellant's promise of long life and suitability. Dr. Hood's experience does not include practice in the United States, and his professional career did not begin until after the initial pad design steps on this project were undertaken. Moreover, although he offered an opinion seemingly without qualification that good design includes a requirement for access to degradable parts, the project examples he notes include projects that either clearly have no such access provided or where his evidence fails to make any such claim. (Findings 16, 18).

The designer of the floating slab system, Dr. George P. Wilson testified that the lack of access stemmed from the design of the slab and was required by the total mass of the slab and the limited space available, which required a continuous, solid form. Provision of access holes would compromise the integrity of the slabs. (Finding 13).

Appellant's claims that access and a fail safe stop should have been provided amount to an assertion that the standard of care governing the WMATA floating slab design required such be done. In order to support this part of its defense, Appellant must establish there is a standard of care required of the designer, that there was a deviation from this standard, and that the deviation caused excessive repair costs. Toy v. District of Columbia, 549 A.2d 1, 6 (DC, 1988); Bell v. Jones, 523 A.2d 982, 988 (D.C., 1987). A professional must exercise the necessary degree of skill and specialized care that is expected of a member of the profession acting under similar circumstances. Morrison v. MacNamara, 407 A.2d 555, 560 (D.C., 1979). This standard of care must be proved through expert testimony. District of Columbia v. Peters, 527 A.2d 1269, 1273 (D.C., 1987). If a claimant fails to establish the standard of care, such failure is fatal to the claim. Meek v. Shepard, 484 A.2d 579, 581 (D.C., 1984).

We find that Appellant's evidence fails the principal test. Appellant has not attempted to establish a standard of care except by implication. There is no showing that the design of the pads deviated from any reasonable standard of professional care because the evidence offered is not persuasive that there was any standard requiring access when this design was developed, especially in view of the Appellant promise regarding the suitability of the pads.

Appellant has also claimed that the design of the isolation pad system is defective because of the fact that the design did not include a fail safe stop support for the sinking slabs.

With regard to the fail safe stop issue, Appellant again relies principally on testimony by its expert, Dr. Hood. *See*A FOF 143. This testimony, however, is not compelling. He notes in a prominent way early in his testimony that a fail safe stop "could" be designed in the original

system. Hood prefiled, p. 8. Later, he asserts the stop "should" have been provided, but this is connected to his belief that the WMATA design was experimental. This is an apparent conclusion that has no corroboration cited. Hood prefiled, Exh. RAH 2, pp. 5-6. The safety stop would have resulted in a loss of the vibration isolation capacity in the event of pad failure. Tr. 351. Again, it is relevant to note that the standard of care cannot be considered in a vacuum and that this design used polyurethane pads that were subject to a contractor promise that the materials were a superior compound for the owner's intended use.

While Dr. Hood noted that there were cases of floating slab track systems where there were no fail safe stops added (Hood prefiled, p. 11), Appellant has not called to our attention any evidence respecting other rail and floating slab designs where fail safe stops were provided. In response to a question regarding possible other designs using a "stop" to remedy elastomer failure, Dr. Hood testified the typical design for vibration isolation of buildings provides such a system, and that similar systems are generally present in bridge design. Hood prefiled, p. 11; Exh. RAH-2, p. 6. This is evidence regarding buildings and bridges, not rail systems, and is expressed in the present tense. It has no obvious or apparent connection with standards for floating slabs in a rail system in an urban tunnel in the 70s. Dr. Hood's testimony is not based on an examination of a standard of care for a floating slab system in a rail tunnel in the United States at the time the WMATA design was developed. In essence, Dr. Hood is saying he would have done it differently, but he does not connect his conclusions with relevant evidence of a contemporaneous standard of care. His testimony is similar to that found wanting in Meek v. Shephard, 484 A.2d at 581, where the expert relied merely on his own opinion, saying he would have acted differently.

We conclude that evidence is lacking that the WMATA design was defective regarding the lack of a fail safe stop.

Next, Appellant claims that WMATA improperly incorporated improvements in the retrofit process. This would be contrary to the proposition that a party in Respondent's position should not be placed in a better position than if the contract had been successfully performed. Meyers v. Antone, 227 A.2d 56, 59 (D.C., 1967). In part, Appellant complains that WMATA used 33% more rubber in the isolation pads installed in the retrofit process than was proper. This is based on a comparison of the estimated volume of the defective polyurethane pads with the volume of the replacement rubber pads. The retrofit method involved a smaller number of larger pads, but WMATA does not appear to contest the use of a larger volume of replacement rubber. (R Reply, p. 11, Tr. 117, 232). Appellant's claimed reduction to the WMATA cost does not allow for savings in labor costs (handling fewer pads) that the WMATA procedure permitted. Also, WMATA could not be expected to retrofit with the identical materials that had failed. The exercise of some discretion in the choice of retrofit approach and materials was forced on Respondent by Appellant's delivery of the defective pads. WMATA's approach was not abusive, and there is no reliable evidence that the WMATA adjustment to a smaller number of larger pads resulted in an improper improvement to the floating slab. We conclude this element of the defense fails.

Supplementary Claim

The first four elements of this part of the claim, core removal cost, perimeter board & caulking, small tools & supplies and miscellaneous material cost are based on estimates by a WMATA estimator, and expert witness, Mr. Nirola. The core is the 16" circular piece, resulting when 16" holes were drilled. The perimeter board fills, or may fill, a gap between this slab and the supporting foundation. There is no evidence that the work underlying the core removal and the perimeter board claims had been performed at the time of the hearing. At most, there was testimony that WMATA had to do it in the future. Tr. 241. The estimates are not corroborated by any evidence of any weight, and this raises the danger of reliance on uncorroborated testimony. We disregard the estimates for these four elements, but believe that some allowance is due for small tools, supplies & miscellaneous materials because the retrofit effort undoubtedly occurred, requiring such support. The total claim for these two claim elements is $22,238. Based on the record as a whole and the Board's experience in such cases, we conclude that $5,000 is a proper allowance for small tools & supplies and miscellaneous material costs, and we so find. Luria Bros. & Co. v. United States, 369 F.2d 701 (Ct. Cl., 1966).

The fifth element of the claim is for one time learning cost. Here, again, there is an estimate by Mr. Nirola, in this case for $35,808, adjusted upward, with very little explanation, from his first estimate of $27,709. There is evidence of difficulty in start up and a learning process, Tr. 143-144, 299-302, and it is consistent with reasonable expectations in the circumstances. There is no indication, however, of why Respondent would reasonably expect Appellant to bear this particular start up expense, and no indication of why the expense was not amortized over the period of retrofit. Support that Respondent cites for this claim, Sierracin/Sylmar, ASBCA Nos. 30380, 27531, 85-1 BCA ¶ 17,875 and FAR 31.205-42 (c) (1), deal with termination expense where a contractor was unable to amortize its starting expense fully. There is no explanation of why this is thought to apply here. Also, there is again no corroboration for either the revised or the final estimate. In view of these considerations, this claim is not allowed.

The next claim is for $29,583 for "survey/noise/vibration" measurement. This also is a claim that had been adjusted upwards. This claim is, again, based only on an uncorroborated estimate, and WMATA concedes that the work had not yet been performed at the time of briefing. R. Reply, p. 20. This claim is disallowed under the principles set forth above. A further claim is included for "Engineering/Consultant Cost" for $65,281. This claim was also adjusted upwards (from $45,058) with little explanation. R.4, Tab 3d. There is evidence that there was a series of engineering studies relative to the retrofit over a period of 10 years. Irshad prefiled, p. 6. This however provides no detailed support for the $65,281 claim. Accepting that some engineering consulting support occurred and applying the principles of Luria, above, we allow $10,250 for engineering and consulting expense.

WMATA claims $53,536 for "Extraordinary Maintenance Cost." This again is an adjusted estimate from a lower figure, $50,000. There is substantial evidence that WMATA was

compelled to install shims under rails that were depressed because of the defective pads and that this process had to be repeated. Irshad prefiled; Exh. RQ-MI-2, p. 16; Tr. 98,244, 258-260 and 634. WMATA, however, supports the estimate with assumptions regarding the size of the maintenance crew and the period of its work that are not self evident, and for which no evidence is cited. There is evidence that the maintenance crew included five to six "guys and a supervisor." Tr. 244. This crew could shim conservatively 200 feet a night, both rails. *Id*. Because D-7 had 1,492 feet (Finding 7), the entire section could have been reshimmed in seven or eight nights, or less. The evidence is lacking however as to the degree the work had to be repeated, and it is not possible to project with complete confidence the number of nights required. In the circumstances, we allow $20,000 for extraordinary maintenance expense.

Pricing of Replacement Pads

The parties also dispute the pricing of the replacement pads. There is evidence that 1400 replacement pads were required. WMATA has claimed 1400 is the correct number, and Appellant accepts this in its alternative cost calculation. A Br., Attachment B. WMATA used a price of $39.58 per pad which, it asserts, was the price paid in 1993, and these pads "were presumably the pads used in the D-7 retrofit." R Reply Br., p. 10. Appellant claims a cost of $28.97 is the price that should be used because this is the price paid in the years the work was performed. A Br. P. 17. Apparently, WMATA purchased pads in phases. The initial phase was priced at $39.58 per pad, and subsequent option like phases were priced $28.97 per pad. R.4, Tab 3a, Sheet 23. WMATA claims $55,412 for the pads it used in retrofit.

There is no binding cost principle guidance in the contract, and WMATA has not shown, nor has it claimed specifically, that the $39.58 pads were identified for the subject retrofit activity. There is no basis for a conclusion that this price should be directly allocated to the subject retrofit claim. Nor is it clear that the lower priced phase pads were used. We believe the best evidence of cost for this element is found in the testimony of Appellant's expert Mr. Fetridge, that the average cost per pad, assuming all WMATA options were exercised, is $32.09. (Fetridge prefiled, Tab A-KRF-2-F, p. 23, and *See* A FOF 46). The cost for 1400 pads is thus $44,926, and this sum is allowed for the replacement pads.

Additional Improvement Defense

Next, Appellant claims the drilling of the 16" access holes in the slab was an improper improvement (a "betterment") because the holes would provide for future maintenance access and have other new advantages such as beneficial air circulation below the pads. The holes were needed for the retrofit, however, and if there were benefits, they were collateral and incidental to the retrofit operation that was required because of Appellant's deficient performance. Also, there is evidence that is persuasive that the holes compromised the integrity of the floating slabs and were a detriment. Chen prefiled, pp. 3-4.

Appellant also contends that the provision of access holes in the retrofit scheme chosen was a reason for choice of the scheme adopted versus an alternative scheme that would have jacked each slab up to 3½ feet. It was a reason, but WMATA internal analyses of the two methods also noted that the access hole scheme ("window cutting") was deemed to have a low impact on operations, permit flexibility in work scheduling, could be done in circular, box and special tunnels as well as permit ease of access. A R.4, Tab 73, p. 3. Impact on rail operations was a concern and a November 1982 report to WMATA noted that: (1) the jacking methods are more time consuming than the slab cutting method and (2) equipment failure during jacking could result in "significant disruption of the WMATA rail traffic." R.4, No. 5244, Tab 65, p. 25. We think it clear that there were multiple reasons for the choice of retrofit method. The fact that one of the reasons for choice of slab cutting was an anticipation of future ease of maintenance does not require a conclusion that hole drilling was an improper improvement. The predominant motivation for this part of the retrofit scheme was totally consistent with mitigation of cost.

Appellant cites improvements in the WMATA next generation design of the floating slab system, apparently intending to show the retrofit has left WMATA in a better position than it originally enjoyed. No particular credit or benefit evaluation is even suggested for this nebulous contention. It is said that WMATA has billed "for the costs of upgrading the floating slab design", A Br. pp. 82-83, but there is no attempt made to isolate these alleged costs in Appellant's alternative cost analysis. A Br., Attachment B. Any victim of a major failure of material can be said to have learned something out of the experience. That does not require that the party responsible be relieved to any extent of its liability because of such benefit.

We conclude that there has been no showing of any measurable improvement in Respondent's subsequent designs that would require a credit against compensation otherwise due.

Credit for Use

The Board's entitlement decision, at pp. 124, 650, included the following holding respecting a period of use by WMATA of the defective polyurethane pads:

> Respondent makes no claim of reliance on a specific service life for the pads. All it says is that their collapse in this case is a latent defect, and a violation of the various contractual promises made by Amber/Booth in seeking approval for their use. We agree. However, there was a period of use of the pads before the defect became apparent, and Appellant is entitled to a credit for this use. *See* General Electric Co., IBCA 442-6-64, 65-2 BCA ¶ 4974 at p. 23,458.

92-2 BCA at p. 124,650.

Neither party complained of this holding by way of motion for reconsideration, and the holding has become the law of the case. *See* Norair Engineering Corp., ENG BCA No. 5244-Q,

97-1 BCA ¶ 28,675.

Appellant filed a Motion *in limine* in the current matter for an Order:

> affirming that for purposes of determining quantum Finding of Fact No. 7 in the entitlement decision is conclusive and binding and shall not be subject to any further testimony, evidence or proceedings in the Appeal.

Finding of Fact No. 7 in the entitlement decision, Norair Engineering Corp., 92-2 BCA ¶ 25,009, follows:

> Part of the reason for selection of fiberglass and natural rubber for use as isolation pads is that there is sufficient information available to state that the materials should last 25 years, at least, with an expectation of a greater period of service.

The Board denied the Motion by letter Order of September 24, 1996, and the hearing in this matter included further evidence respecting the issue of useful life of the original polyurethane pads.

WMATA now claims that the reasonable expectation of life of the pads at the time of design was 50 years or more. However, the principal basis for this contention is testimony by Dr. George P. Wilson, whose former testimony provided the basis for Finding No. 7, entitlement decision, which stated a life expectancy of "25 years at least" for the pads.

Appellant asserts a pad life expectancy of 20 years, based substantially on the testimony of its expert, Dr. Hood. This evidence is most carefully expressed in Dr. Hood's prefiled testimony where Dr. Hood indicates that, when designing a rubber isolator pad, he would consult with his materials experts, and that "their advice would be" to expect a life of 20 years. Hood prefiled, p. 14. We weigh this testimony with Dr. Wilson's testimony in the entitlement hearing and find that testimony more credible. Also, Appellant itself appears to recognize the credibility of the 25 year life span in its apparent concession that the " . . . Design of Useful Life of the Isolation Pads was 20 to 25 years. . ". Appellant Opening Br., p. 83.

We find the claims by both parties for longer and shorter periods of useful life not supported by substantive evidence and conclude on balance that the useful life expectancy of the polyurethane pads was 25 years.

Appellant claims WMATA enjoyed a useful life of 19 years for pads, but this is based on the fact that WMATA did not retrofit until 1994, and an unstated argument that the period of use should include time after which the pads had deteriorated and collapsed. This is not a period of use in any reasonable sense. The holding of the entitlement decision is that there was a period of

use "before the defect became apparent." 92-2 BCA at p. 124, 650. The pads were installed in 1975, and the defects became apparent in 1981, resulting in a six year period of use. Thus the credit formula is 6/25, or a use factor of 24%, that should be applied to the cost of the defective pads.

When we speak of a period of use, we refer to use of the polyurethane pads. Thus, the factor of 24% should be applied to the cost of those pads. Appellant, in its cost analysis, would apply its credit factor of 76% (whereas the Board has found 24% the correct factor) to a base of $101,436, which is Appellant's calculation of all replacement costs, including labor, benefits, materials, equipment and indirect costs. *See* Fetridge prefiled, Tab A-KRF-2-G, pp. 32-38. There is no rationale for this approach. Replacement costs bear some relation to the defective pads, but the inquiry regarding credit for use of the pads, to repeat, should be regarding the cost of the polyurethane pads.

There is no evidence that has been called to our attention respecting cost of the defective pads. The contract priced "Floating Slabs Type 2" by the square foot of slab. The pads, attached to the slabs, were included in the delivery requirements for the slabs, and an estimated quantity of 16, 785 square feet of slab gave a bid of $226,597.50. R.4, No. 5244, Tab 83. No individual cost per polyurethane pad appears. In this situation, we follow the approach suggested by Appellant, which is to apply the number of units, 1400, multiplied by cost per replacement pad, decreased by a factor of 33% to allow for the larger size of the replacement pads. We use the average cost per replacement pad (see above) of $32.09 as the best evidence of the cost of the polyurethane pad. Thus, gross cost is 1400 X $32.09, or $44,926.

The cost decrease is .33 x $44,926, or $14,826 to allow for the smaller size of the polyurethane pad. Thus $30,100 is the cost of the defective pads. This appears reasonable in view of the $226, 597 cost of the slabs.

Applying the 24% credit for period of use by WMATA (.24 X $30,100) results in a credit of $7,224, and that sum is allowed as a credit against the WMATA claim.

Salaries

Subject to our observations above regarding the loss in value principle, Respondent has the right to recover the cost of correcting Appellant's defective workmanship, which includes the salaries and wages of WMATA employees who necessarily performed the corrective work. *See* Worldwide Parts, ASBCA No. 38896, 91-2 BCA ¶ 23,717 and cases cited therein.

The basic claim includes $188,902 for wages, which consists of $132,068 for hourly wages and $56,834 for salaries. We have determined that $113,859 is allowed for hourly wages. (Finding 24)

engaged on the project for approximately 31 weeks, and by Mr. Adams, who estimated he spent 50% of his time on the project during the retrofit.

hourly salary of $26.87 x 32.5 hours allowable per week x 31.28 weeks results in a calculation:

$26.87 x 32.5 x 31.28 = $27,316

was supervised. *Id.*

the contract would exclude reimbursement for "such overhead personnel as assistant superintendents, superintendents" and so forth. We do not agree that the Force Account Article

reasonable principle respecting compensation in a claim of this nature, that overhead personnel not directly involved in the work are not ordinarily a part of the direct claim. We apply that

claim for Mr. Adams salary. Thus, we allow $141,175 in wages and salaries.

Fringe Benefits

55.1869% applied to hourly wages, and 52.286% applied to salaries. The rates are supported by the WMATA audit report, and the opinion of the WMATA audit witness. Rosenberg prefiled,

Appellant argues the matter is governed by Federal Rule of Evidence (FRE) 1006 that authorizes the use of summaries, charts or calculations when voluminous writings cannot be

The originals or duplicates, shall be made available for examination . . .

Appellant maintains that the underlying records have not been made available. However, *See* Tr. 33. Although Appellant's witness testified that there

convinced of this. The Board granted an Appellant Motion to compel production of cost data, and other documents, on July 11, 1996. Also, it is not clear that the Federal Rules of Evidence

event, the rule in the District supports the admission of summaries in the absence of source data as long as there is no suspicion of fraud. _____, 508 A.2d 110, 112 (D.C., 1986). No fraud has been suggested.

Also, it is doubtful that the fringe benefit percentage factors, noted above, are summaries within the meaning of Section 1006 even if Rule 1006 applied. They are more in the nature of an expert opinion stated by the WMATA expert audit witness, Mr. Rosenberg. Be that as it may, Appellant itself calculated its proposed alternative cost analysis that used a reduced cost base, but applied a "fringe benefit at the same rate markup" used by WMATA auditors. Fetridge prefiled, p. 11. Fringe benefits, including payroll taxes, leave and medical insurance, are a fact of life in contemporary institutional employment. Appellant knew that "some costs" would have been incurred relative to direct labor. *Id*. On balance, we accept the rates found to apply by the WMATA auditors, and accepted by the Appellant's cost analysis, at least in part, and apply them to our earlier findings as follows:

Salary, Supervisor
$27,316 x .52286 = $14,282

Hourly Wages
$113,859 x .551869 = $62,835

Thus, fringe benefits are allowed in the amount of $77,117.

Materials

Respondent's audited claim includes $127,640 for materials as follows:

	Units (a)	Unit Price (b)	Total
Isolation Pads	1,400	$ 39.58	$55,412
Studs	3,625	1.40	5,075
Boxes of Epoxy	242	40.80	9,874
Grates	375	29.75	11,156
Fasteners	52	40.84	2,124
16" Drill Bits	25	454.07	11,352
5" Drill Bits	19	392.00	7,448
1¾" Drill Bits	197	90.00	17,730

		Unit Price (b)	Total
	1,067	7.00	
Total			**$127,640**

Rosenburg prefiled, Report AUD 96-042, p. 6.

Isolation Pads

The Board allowed $44,926 for replacement pads. *See above*.

Studs

Appellant maintains that there is no evidence regarding the number of studs used and that the price per unit, $1.40, is based on "an internal listing" record dated after the retrofit work was completed. A FOF 51. We find there is adequate evidence in WMATA work papers supporting the WMATA use of 3,625 units. (Finding 29). We find moreover, that the claimed price per unit should be and is allowed. $1.40 per unit is not a patently unreasonable sum and is, in fact, the lowest quoted price on the relevant WMATA work paper that reflects purchase orders from "10/06/89" through "11/01/94." (*See* A R.4, Tab 129 I, p. I-4-19). The sum of $5,075 is allowed for studs.

Boxes of Epoxy

As above, we find there is adequate evidence that 242 boxes of epoxy were used on the retrofit. WMATA claims $40.80 as a unit price. Its work paper in the Board record, however, reflects unit prices of earlier acquired batches as low as $34.70 (in 1989) and $35.00 (4/88 to 4/89). WMATA was unable to identify the boxes used, by price, and there is no justification for its claim at the highest unit price its record reflects. Accordingly, we allow the claim based on a unit price of $35.00 because that batch is the most likely source of the inventory used on this retrofit project. Accordingly, we allow $8,470 for epoxy.

Grates

Nothing is allowed for grates, which were intended as hole covers. At the time of the hearing, grates had not been installed, and it is not clear there is a need for grates. If grates have been subsequently installed, circumstances suggest they could be regarded as a betterment.

Fasteners

WMATA claims $2,124 for 52 fasteners at $40.84 unit price. Fasteners are for securing

number of new fasteners were needed. The only evidence supporting the unit price comes from an invoice dated “4/28/95" or well after the completion of the retrofit. We conclude there is

Drill Bits

WMATA has made a claim for three classes of drill bits, $11,352 for 25 16" drill bits;

the bits were used, (*See*
only to correct a defective design or that they were improperly charged as “material” when they should have been treated as equipment or a small tool. If the latter had applied, their cost,

claims WMATA’s pricing of its claim is improper.

We conclude that the bits were used in the retrofit effort. The basic facts of the retrofit

we accept the number of units in the WMATA claim as established. (Finding 29). As noted above, moreover, we are not convinced that the holes that were drilled, and which consumed the

bits were a necessary part of the retrofit effort, and the expense of the bits is proper and allowable as a part of the claim.

“Solicitation, Offer and Award” sheet. The offer is dated “1/20/94" and calls for first article approval within 30 days of award. A R.4, Tab 129 I, pp. I-4-5 - I-4-6. We conclude there is

to allow for a 1% prompt payment discount. There is no evidence that WMATA did not obtain this discount. Thus, we allow $449.53 x 25, or $11,238 for the 16" bits.

$390 per bit. *Id.*

WMATA records support only 4 1¾" bits at $90 per bit. *Id.*
auditor memorandum indicates that balance of the units (193), taken from inventory, should be priced at $70 a piece. , p. I-2-1. This results in an allowance of $13,870 for 1¾" bits.

Clips

WMATA claims $7,469 for 1,067 "clip/clamps" a two part unit at $7 per clip/clamp. The claim is $5.50 per clip and $1.50 per clamp. The $5.50 is supported by WMATA records indicating expected delivery date of May 13, 1994 of a quantity of 8000 units. It connects adequately with the period of retrofit. Review of a similar record for delivery of clamps, however, supports only a price of $ .60 per unit. Accordingly, we allow $6,509 for clip/clamps.

Equipment

WMATA claims equipment expense in the sum of $145,007. This includes $84,826 for a prime mover, $11,636 for a flat car and $48,545 for miscellaneous equipment.

The prime mover is a small diesel locomotive that was used on the project for hauling tools, materials and equipment on a flatcar (see below) to and from the worksite nightly during the period of retrofit. WMATA's calculation of its claim is based on a forty hour week and the hourly figure of $72.90. The latter figure is not based on a classification guide reference for a locomotive, but for a piece of "comparable equipment" from WMATA's current pricing guide, the Contractor's Equipment Cost Guide. *See* R Reply, p. 14. WMATA used the hourly price of "Lifting Equipment (Rough Terrain Hydraulic Cranes . . .) 105 foot Boom Length."

Appellant challenges the use of a forty hour week, claiming the equipment was not in use the full week. Appellant would accept the $72.90 hourly rate, but only on the basis of a conclusion that only 120.25 hours (about 3¾ hours per week), for the entire retrofit period constituted full operations. Then Appellant calculated WMATA's ownership costs at $40.01 hourly for the prime mover, and would allow 436.75 hours, (about 13.6 hours per week) for idle time. A FOF 71.

Our conclusion is that the testimony supports a full use allowance at the level of 32.5 hours per week for the prime mover. The travel time between the New Carrolton yard and the work site was approximately 20 to 30 minutes, and the evidence supports two trips per shift, going and coming. There is testimony that the presence of the prime mover at the site was required, and the locomotive and its associated equipment was in fact used, while on site. (Findings 36-37). This leads us to conclude that, with the travel time, the equivalent of the work crew allowance of 32.5 hours weekly for the prime mover is proper.

The prime mover was effectively committed to the project for the balance of the week, and thus the balance of 7.5 hours per week is allowable as idle time at the conceded ownership hourly costs of $40.01. That is, we are allocating a full 40 hour week for the prime mover. We apply a 29 week use period for the total equipment usage. *See* Rosenburg prefiled, AUD 96-042, p. 7.

Thus, the allowance for the prime mover is:

32.5 x 29 x 72.90 = $68,708 for operational use; and,

7.5 (hours per week) x 40.01 (hourly rate)

prime mover allowance of $77,410.

The flat car was used to transport tools and equipment from the worksite nightly. The

prime mover. Tr. 207-208, 224-225, 228-238. Although WMATA's method of calculation of the total claim is based on a calculated cost of repair per linear foot, it is apparent that its stated

roughly translates into a claim that the flat car was used fully during a forty hour week for an approximate 29 week retrofit period.

However, the claim of $10 an hour for the flat car is effectively unsupported. Mr. Rosenberg's testimony is that the rate was determined as follows:

that a reasonable equipment rate for a flat bed truck is $10 per hour.

AUD 96-042, p. 8.

sum, testifying that equipment records "are not maintained generally in that matter," and he could not document the claim from daily reports. Tr. 447-448. The source technical personnel were

estimate and, for that reason, we disallow it. Maryland Painting Co.
BCA ¶ 10,223 at p. 48, 188.

Nevertheless, the record is clear that the flat car was used substantially in the retrofit

respecting the flat car and its use on this effort, and because Appellant's position of zero expense is unreasonable, we allow the sum of $500 for this element of the claim.

$25,273 for ownership costs and $23,272 for operating costs. R Br., pp. 14-15.

Ownership costs were determined by a setting forth alleged acquisition costs of $192,749

five years. Appellant challenges the entire claim, and would allow nothing for miscellaneous equipment based on contentions that WMATA records do not show the equipment was used on

We are satisfied that there was substantial miscellaneous equipment usage on the retrofit that was required because of Appellant's delivery of defective pads. We regard the Appellant's position of zero allowance as unreasonable. The basic acquisition cost of $192,749 appears in the record as follows:

Contract 1D0071
Defective Isolator Pad Retrofit
Equipment Cost Analysis

Equipments used to retrofit defective isolator pads:

1. 6 Each - 16" core drills	15,746	$ 94,476, per invoice
2. 3 Each - 5" & 1¾ core drills	1,368	4,101, per invoice
3. 9 Each - Rock Drills	1,031.53	9,284, per invoice
4. 18 Each - Hydraulic Jacks 5. Synchronizing Motor Control	}	41,957, per invoice
6. Hilti Drills - 4 Each	727.25	2,909, per invoice
7. 2 Each - Geismar	8,900	17,800, per invoice
8. Survey Equipment	3,946	3,946
9. 2 Each - 5.5 KV Generators	2,282	4,564
10. 1 Each - 60 KV Generators	10,929	10,929
11. 2 Each - Flood Lights	1,390	2,780
TOTAL		$192,749

R.4, Tab 3a, Sheet 4.

It was established at the hearing, however, that four 16" drills, not six, were used (Tr. 206), that only one generator was used (*Id.*) and that no survey was conducted (Chen prefiled, amendment #1). Thus, adjustments reflecting these facts are needed to reflect a correct allowance for miscellaneous equipment. We determine WMATA's acquisition cost as follows:

4	16" Drills @ $15,746	
3	5" & 1¾" Drills @ $1,368	$ 4,104
		$ 9,288
18	Hydraulic Jacks & Motor Controls, Total	
4	Hilti Drills @ $727	$ 2,908
		$ 17,800
1	5.5 KV Generator @ $2,282	
2	Floodlights @ $1,390	$ 2,780

The 18 Hydraulic jack allowance has corroboration in Chen prefiled testimony, figure 6. We regard the other items as reasonable given the nature and size of the retrofit effort. The

WMATA had claimed $21.72 per hour for ownership costs of miscellaneous equipment. We conclude its ownership cost is $16.24 per hour by applying a proportion established by the

$16.24 hourly cost applied for 40 hours for 29 weeks (the figure for prime mover usage is also reasonable for miscellaneous equipment) gives $18,838, which is allowed for ownership cost.

operating costs were incurred at a rate of $20 per hour, 40 hours a week, for slightly less than 31.85 weeks. The WMATA audit report states the following regarding the $20 rate claim:

> that reasonable rate for operating expenses for miscellaneous equipment is $20 per hour.

This is, again, an unsupported estimate. We reject it under Maryland Painting other credible WMATA evidence on this point is cited, and we accept Appellant's alternative analysis of $5 per hour operating expenses for 436.75 hours miscellaneous equipment usage, or

Indirect Costs

WMATA claims $66,741 for indirect cost and $70,377 for General and Administrative

The indirect cost claim is supported in part by the application of a rate of 19.01% to the claimed direct wage and salary base of $188,902 for $35,910. The rate is based on the ratio of

indirect employees in the WMATA Office of Track and Structures (TRST) to its direct labor employees for fiscal year ended June 30, 1994. To this it adds a fringe benefit sum (52.286% of indirect wages), $18,776 indirect costs (exclusive of wages), $10,984 and a small sum ($1,071) reflecting the supervision of TRST by the WMATA Assistant General Manager for Rail Service. *See* Rosenberg prefiled, AUD 96-042, pp. 9-11. The G & A sum is determined by application of a G & A rate of 11.49% that was applied to an adjusted project direct and indirect cost claim of $612,509. The rate was obtained by allocation of WMATA's total G & A expenses to all operating segments, and in particular to the Department of Rail Service (RAIL). The allocations were derived from records in WMATA's Department of Finance. *Id.*, pp. 11-12.

Appellant does not contend that WMATA, as a government agency, is barred from claiming overhead by reason of its status. It does argue that the overhead claim is based on an inadmissible summary, and that there is an absence of credible evidence in support of the claim. A Br., pp. 73-74. The contention is again that the WMATA evidence should be treated as a summary of voluminous evidence under Federal Rule of Evidence 1006, and that the evidence is not admissible because the underlying records were not made available to Appellant as required by the Rule. The project is based in the District of Columbia, and we apply the law of the District in this matter. *See* WMATA Compact, D.C. Code, Sec. 1-2431, Article 80. As we noted earlier, there is no reason to conclude that District law mandates the Federal Rules. District courts have indicated that they may look for "guidance" to principles underlying the Federal rules and that they will follow the "policy" of particular rules. Eason v. U.S., 704 A.2d 284, 285 (D.C., 1997); Johnson v. U.S., 683 A.2d 1087, 1090 (D.C., 1996). There is no indication, however, that there is strict, unqualified application of the Federal Rules of Evidence in District law. As indicated above, a summary of voluminous records is admissible, even in the absence of the underlying material, so long as there is no reasonable suspicion of fraud. Roberts v. U.S., 508 A.2d 110, 112 (D.C., 1986). To repeat, there is no hint or suspicion of fraud in the present matter.

Also, it is not clear that Appellant has established a basis for its claim that it did not obtain access to underlying documents. In the course of prehearing discovery, the Board partially granted an Appellant Motion to Compel (of June 24, 1996) on July 11, 1996. The Board letter respecting this matter granted specific motions to compel including Request #46; *i.e.*, a request:

> regarding all documents related to the estimated cost of isolation pad replacement and floating slab retrofit on any Metrorail section.

Appellant's Motion, June 24, 1996, p. 20. A Board report of a discovery conference of November 6, 1996, does not reflect any Appellant concern over cost data or lack of cost data. Board letter to counsel, November 18, 1996.

We accept the testimony of Mr. Rosenberg, WMATA Assistant Auditor General, respecting the fringe benefit rates, the allocation methods, the resulting G & A rate and the indirect cost rate as part of his expert testimony. *See* Rosenberg prefiled testimony. We apply the rates derived by Mr. Rosenberg to our previous findings respecting cost allowances as follows:

TRST Indirect Wages - .1901 x Allowance for Wages and Salaries(above)

.1901 x $141,175 = $26,837

.52286 x $26,837 = $14,032

TRST Indirect Cost (exclusive of wages) is $469,400. p. 10.

Ratio of allowed direct wages, $141,175, to total TRST wages, $8,075,312 = .017

Total indirect cost of retrofit is $26,837

7,980

We disallow the claim for an allowance for the Assistant General Manager, RAIL's office. The relationship of the claim to the work is not well explained.

The testimony of Mr. Rosenberg supports a G & A rate of 11.49%. As indicated, WMATA claims $70,377 for G & A. p. 12. We apply the 11.49% rate to the total direct and indirect retrofit allowance as follows:

indirect cost of $498,843, less cost of Facilities Capital (*See Id.*
$480,462. Application of the G & A results in allowable G & A of $55,205.

Retrofit Funds from the Federal Government

sum equal to 80% of the retrofit costs has been received by WMATA from the Federal government by way of a grant. Thus, Appellant contends, WMATA cannot recover here, or,

does not contest receipt of the money from the Federal Transit Administration (FTA), but contends that under the collateral source rule, "the wrongdoer may not be benefited by collateral

double recovery.

The collateral source rule is a principle of tort law that a tort feasor's liability is not reduced by payments or other benefits received by the injured party from collateral sources. *See* Restatement (2d) of Torts, § 920 A (1977) and United States v. City of Twin Falls, 806 F.2d 862, 873 (CA 9, 1986). The parties are in disagreement over whether the doctrine applies in a contract situation. We need not resolve this particular disagreement, because we believe that the premise of Appellant's contention, that WMATA has received the benefit of Federal funds and that this defeats recovery, is flawed.

WMATA says it is obligated, by the terms of the Federal grant, and by a Master Agreement with FTA, to pay over 80% of any funds recovered from Appellant. The Agreement provides in part as follows:

> Third Party Contract Disputes or Breaches. The Recipient agrees as follows:
>
> (1) General. Because FTA has a vested interest in the settlement of any dispute, default, or breach involving any federally assisted third party contract, the Recipient agrees to pursue all legal rights available under any third party contract. FTA reserves the right to concur in any compromise or settlement of any third party contract claim involving the Recipient.
>
> (2) Notification to FTA. The Recipient agrees to notify FTA of any current or prospective major dispute, breach, or litigation pertaining to any third party contract. If the Recipient seeks to name the Federal Government as a party to litigation for any reason, in any forum, the Recipient agrees to inform the FTA before doing so.
>
> (3) Federal Interest in Recovery. The Federal Government retains the right to a proportionate share, based on the percentage of the Federal share committed to the Project, of any proceeds derived from any third party recovery. If the third party contract at issue contains a liquidated damages provision, the Recipient agrees to credit any liquidated damages recovered to the Project account unless the Federal Government permits otherwise.
>
> * * * *

A R.4, Tab 140, p. 25.

A similar provision appears in the Federal Grant. *Id.*, Tab 108, p. 17.

Appellant contends that the Agreement and Grant provisions apply logically "to work awarded third party contractors under the particular grant." A Reply, p. 19. The claim, by the Federal Government, however, plainly extends to any recovery respecting "any federally-assisted

third party contract," and this would include the subject contract 1D0071 with the Norair Engineering Corporation, a document replete with references to its Federal backing. *See*, eg, p. 3, App. A (reference to requirements for contracts and subcontracts awarded for "Federal and Federally assisted construction") and App. C (coverage of Federal Labor Standards and U.S. Department of Labor regulations). It is clear that any recovery under 1D0071, which is the subject of this appeal, is subject to the recovery and vested interest provisions of the FTA agreement and grant. We conclude that, given WMATA's obligations to restore appropriate sums to the FTA, its rights against Appellant are not diminished by receipt of Federal Funds for the retrofit project. Appellant has not shown that a double recovery has occurred.

Economic Waste and Mitigation

The principle that an injured party may not commit economic waste in its attempt to recover damages establishes that in circumstances similar to the present case, the claimant must accept work not in conformance to the contract, if insistence on strict performance would be wasteful. An example occurs when an adequate, but non-conforming piece of equipment, such as plumbing, has been incorporated in a building. To tear the work out and rebuild the structure would be wasteful, and the economic waste doctrine prohibits it. *See* Granite v. United States, 962 F.2d 998 (Fed Cir, 1992), Jacob & Youngs v. Kent, 230 NY 239, 129 NE 889 (1921) and Restatement of Contracts, 2d 348 (2) (1981).

Much of Appellant's complaint regarding the WMATA claim can be subsumed under the economic waste doctrine. Appellant however has not established the first necessary point in this defense -- that its contract performance is adequate. The Board conclusions in the entitlement phase of this case is that pads delivered by Appellant failed. The pads:

> in fact, deteriorated substantially, softened, generally lost their integrity, became gummy or sticky, and, at least in one case, flattened to a pizza like shape.

Norair, 92-2 BCA at p. 124,648.

Ignoring these conclusions, Appellant now appears to claim its performance was adequate because the slab system allegedly continued to provide adequate noise and vibration attenuation. The pads, however, have a dual function of noise and vibration isolation and support of the floating slab. (Irshad prefiled, Exh. RQ-MI-2, pp. 19-20). It is clear that the support function was completely lost by the pads' failure. The evidence shows that WMATA had to support rails at the failed section by the use of shims, that this was done to a maximum level, and that this was a temporary solution to the problem of maintaining rail elevation. Tr. 201, 243-244.

The Appellant claim that adequate noise and vibration attenuation remained is not well supported. A principal support for this claim is testimony by Dr. Hood. A FOF 179. Dr. Hood admitted, however, that his conclusions regarding noise attenuation were based on one data

source that originated "close to" to the contract section at issue. Tr. 653-654. Dr. Hood himself had done no measurements. Tr. 653. There is substantial evidence that the use of floating slabs with natural rubber pads remains a necessary solution for noise attenuation within certain ranges, and that the method used by WMATA to retrofit the contract section was a sound approach "to restore . . . the noise and vibration characteristics of the floating slabs." A R.4, Tab 90, Parson's letter of April 27, 1993; Chen prefiled, pp. 2-3.

We conclude that there was no economic waste in the Respondent retrofit effort at issue.

Further Mitigation Claims

Appellant also points to a post-failure WMATA report released in 1993, that indicated floating slabs need not be used as extensively in future construction because recent experience indicated small changes in ground borne noise and vibration might not be noticed. A R.4, Tab 90, pp. 3, 13. This report indicated use of "cologne eggs" as an attenuation device "in borderline cases." *Id.* This report does not overcome the more pointed and specific evidence regarding the need for retrofit on D-7. Also, the fact that no successful complaints regarding noise may have been legally successful against WMATA (A FOF 182) does not preclude WMATA from a retrofit meeting its noise and vibration control criteria. Mitigation does not require that WMATA carefully calibrate its noise control policies down the lowest common denominator of the most extremely insensitive individual.

The Appellant claim that the degraded pads at Section D-7 resulted in only 1db degradation of isolation capacity is based on testimony by Dr. Hood (A FOF 180) who, as we have noted, conducted no tests and based his conclusions respecting D-7 on a test at a site with different characteristics but which was nearby. Tr. 647-654. It is not compelling evidence. Nor does the possibility that other methods of maintaining rail elevation have been identified (A FOF 185) require a conclusion that waste has been committed or that damages were excessive.

Appellant further contends that WMATA could have completed the retrofit in 48 hours; *i.e.*, during a weekend period requiring that rail service be single tracked; that WMATA failed to afford to Norair an opportunity to repair the work itself; that the work should have been mechanized; and, that the WMATA work force was inefficient.

WMATA responds that the needs of the WMATA mission, to provide reliable and safe public transit, must be accommodated. WMATA had considered a mechanized approach, but concluded that the needs of the passenger operation precluded it. Tr. 140. There is no reason to suppose that this conclusion was arbitrary or not based on genuine concern for the needs of the traveling public. The hypothetical 48 hour retrofit would require restricted, single track operations during a weekend period when the system, although operating a reduced schedule, is still open for service. Also, single tracking presents the additional danger of a complete blockage of traffic in the event of a malfunctioning train on the single track. Tr. 765.

WMATA maintains use of its own work forces helped insure a minimal impact on the operating system and helped insure safety. There is testimonial support for these contentions that we find credible. Chen prefiled, Tr. 171-172. Also, we decline to accept Appellant's apparent presumption that private work forces are inherently and inevitably more efficient than public. Appellant's Mr. Ayers testimony about private labor rates and fringes, (Ayers prefiled, pp. 23-24) does not necessarily translate into lower competitive contractor bids or safe and competent performance.

Opportunity to Repair

Appellant makes a pro forma claim that WMATA improperly failed to offer an opportunity to Norair to repair and retrofit (A FOF 61) and does not support this with any legal argument. Earlier, the Board concluded that WMATA could proceed under the public interest provisions of the Inspection & Acceptance provision, Article 1.10 (b), that permits acceptance of defective work by Respondent subject to an appropriate adjustment in price. Norair Engineering Corp., ENG BCA No. 5244, 97-1 BCA ¶ 28,917 at pp. 144, 152. The evidence noted above supports a conclusion that use of WMATA work forces in the repair and retrofit was in the public interest. Indeed, in some circumstances, a government agency may be compelled to accept non-conforming work in the public interest, where to order repair by the contractor might be regarded as economically wasteful. *See* Granite Construction Co. v. United States, *supra.*

Further Defenses

Next, the Appellant maintains that there has never been final acceptance of the work, and that the Respondent cannot claim for latent defect under the Inspection and Acceptance article. This is an argument that should have been made in the entitlement decision, which was tried and decided on the implicit basis that there had been a final acceptance, that the pad defects were discovered after acceptance and that the defects were latent. The conclusions of that opinion are the law of the case. Norair Engineering Corp., ENG BCA No. 5244-Q, 97-1 BCA ¶ 28,675. Also, there is formal evidence that final acceptance had occurred in Contract Modification No. 037 on September 30, 1976. A R.4, Tab 56. This defense has no merit.

Appellant maintains "the warranty is unenforceable." This again is an attempt to revisit and relitigate the entitlement decision, which we decline to do. Appellant is responsible for the delivery of latently defective isolation pads and for breach of warranty of fitness as indicated in the entitlement decision. Appellant maintains warranty clauses may not be construed to allow remedies not set forth specifically. Kordick & Sons v. United States, 12 Ct. Cl. 662, 668 (1987). Kordick however is based on precedent that strictly construed government drafted warranty clauses under familiar principles. *See* O.F. Paulson Construction Co., VACAB No. 1214, 79-1 BCA ¶ 13,623. The warranty in the present matter was introduced by Appellant's supplier.

There is no requirement in general contract law that individual contracts specify damages. Nevertheless, the remedies afforded here to Respondent for acceptance of a defective delivery are spelled out in the Inspection and Acceptance article.

Disputed Evidence

The parties have filed opposing positions respecting the introduction in the record of certain documents that arguably relate to settlement discussions. Appellant has not denied WMATA counsel's representation that the materials, A R.4, Tabs 80, 81, 82, 84, 85 and 93 were delivered to a former counsel for Appellant in the course of settlement discussions. Tr. 46. Respondent contends the materials are inadmissible under FRE 408 which would guide a District of Columbia Court. Tabs 80, 81, 82, 84 and 85 appear to be WMATA documents that relate to apparent price, cost, or estimate data for various retrofit sites or projects. The documents are somewhat cryptic, incomplete, use short hand phrasing, are undated, in some cases do not relate to the subject contract directly, and generally have no compelling impact. They are in a class of evidence that requires testimony to support whatever proposition a proponent is advancing. Nevertheless, the items are admissible because, at most, they do not provide evidence of compromise but were merely produced in connection with settlement discussions. The Rule does not exclude such material.

Tab 93 is an internal WMATA memorandum discussing settlement conversations with a former Appellant counsel and it includes evidence relating to, or suggesting, offers to accept valuable consideration in compromise attempts. We exclude Tab 93 under FRE 408.

CONCLUSION

The Appeal is allowed and denied in part. We find Respondent is entitled to an appropriate adjustment in price, calculated as follows:

Small tools, Miscellaneous Materials	$ 5,000
Engineering and Consultant	10,250
Extraordinary Maintenance	20,000
Replacement Pads	44,926
Wages and Salaries	141,175
Fringe Benefits	77,117
Materials, exclusive of pads	52,594
Prime Mover	77,410
Flat Car	500
Miscellaneous Equipment, Ownership Cost	18,838

Miscellaneous Equipment, Operations		2,184
Indirect Cost		48,849
Total, Direct and Indirect		498,843
Less Cost of Facilities Capital		18,381
(Rosenburg Prefiled, p. 12)		480,462
G & A @ .1149 = 55,205		55,205
Total WMATA claims	535,667	
Less credit		7,224
Total due WMATA		$528,443

Date:

DONALD W. FRENZEN
Administrative Judge

I concur.

WESLEY C. JOCKISCH
Administrative Judge
Chairman

I concur.

HAROLD C. PETROWITZ
Administrative Judge

* * * * * * * * * * * * * * * * * *

I certify that the foregoing is a true copy of the Corps of Engineers Board of Contract Appeals Decision No. 5244-Q, Appeal of Norair Engineering Corp., under Contract No. 1D0071.

Date:

MARYELLEN D. SIMPSON
Recorder